

SEPTEMBER 2.

Mr. THOMAS MEEHAN, Vice-President, in the chair.

Nineteen persons present.

A paper entitled "The Corals and Coral Reefs of the Western Waters of the Gulf of Mexico," by Prof. Angelo Heilprin, was presented for publication.

SEPTEMBER 9.

Mr. BENJAMIN SMITH LYMAN in the chair.

Fourteen persons present.

A paper entitled "Echinoderms from the Northern Coast of Yucatan and the Harbor of Vera Cruz," by J. E. Ives, was presented for publication.

The death of Mr. William C. Henszey, Treasurer of the Academy, on the 7th inst., aged 76 years, was announced.

SEPTEMBER 16.

Mr. THOMAS MEEHAN, Vice-President, in the chair.

Nineteen persons present.

Papers under the following titles were presented for publication:—

"New and Old Trochidæ." By H. A. Pilsbry.

"The Perisomic Plates of the Crinoids." By Charles Wachsmuth and Frank Springer.

SEPTEMBER 23.

The President, Dr. JOSEPH LEIDY, in the chair.

Forty persons present.

Remarks on Ticks.—PROF. LEIDY remarked that in his visit to Beach Haven, N. J. to spend the summer, he found the mosquito less numerous than usual, but in the earlier part of the season the Tick more frequent. One day, in June, after passing for a few yards among some Myrica bushes he picked eight of them from his clothes.

They were repeatedly taken from a pet dog, but usually escaped notice until more or less filled with blood. Three in succession were unnoticed until fully distended and voluntarily detached themselves. One of these was weighed and found to be twelve grains. It was also found that it required nine unfed ticks to weigh one grain, so that the fed ones increase to more than one hundred times their weight and bulk. Curious to learn something of the life of the Tick, the three specimens were placed in a box in the beginning of July, in some moist sand and moss. They sought a slight hollow in the sand from which they afterward did not move. After a week they began laying eggs and this went on for a couple of weeks, until each Tick had extruded a mass nearly as large as itself. The eggs were laid in advance of the position of the body, discharged from between the anterior two pairs of legs—the Ticks remaining constantly in contact with them. The eggs were oval, brown and shining, and measured 0.5 mm. long. The parents became much contracted and shriveled and all died from the 16th to the 18th of August, about the time the eggs began to hatch. This continued for about a week until all were hatched.

The larval Ticks were brown, ovate and possessed three pairs of limbs. They measured 0.6 mm. long and 0.4 mm. broad. As many escaped between the side of the lid and box in which they were contained, they were transferred into a glass bottle with a cork stopper about an inch broad. The Ticks gradually collected into three compact swarms, the largest of which was formed beneath the cork its whole breadth, and sometimes, in part at least, nearly a line thick. Another swarm compacted itself in the interval of two crossing twigs about as long and thick as the little finger, and the third formed a dome-like mass, about one-third of an inch broad, on one of the twigs. From time to time they partially scattered and then collected again in the same close swarms.

Exhibited to the Academy, this evening, September 23d, the young Ticks appear yet to be alive and in good condition, though they have eaten nothing. Fruit and other parts of plants have been placed at their service but they do not even approach them. On two occasions some were placed on Prof. Leidy's arm, but they did not seem disposed to attach themselves.

The mature Ticks present two well marked varieties, probably the two sexes. In the one there is a conspicuous white spot on the back immediately behind the head, sharply defining a thoracic shield. In the other there is no distinct appearance of the shield, but fainter white streaks lie outside of its position and extend in four feebler streaks on the abdomen, apparently defining the intestinal coeca. In the former the genital aperture is central between the anterior two pairs of limbs; in the latter it is between the second pair of limbs. The blood filled specimens that laid the eggs, accord with the former.

He was unable with certainty to refer our common Tick to its proper place among the multitude that have been named, but supposed

it to be the *Amblyomma americanum* of Koch, indicated earlier by Linnæus as *Acarus americanus*. There is much uncertainty in the knowledge of our Ticks. Koch ascribes nine species to North America, referring them to the genera *Amblyomma*, *Ixodes*, and *Dermacentor*; the last belonging to Pennsylvania. Say describes six other species of *Ixodes*, Packard two and Riley one. Say's *Ixodes scapularis*, which the author says is common in our forests and attaches itself to various animals, seems to approach closely the Beach Haven Tick, and Riley's *Ixodes bovis* also seems to accord pretty well, judging from the figure and characters given. If, however, the latter at maturity is half an inch long as stated by Packard, it is most probably a different species from the *Amblyomma americanum*. He had in his possession a Tick, distended with blood, half an inch in length, which came from Camp Sheridan, Nebraska, agreeing in all respects with those from Beach Haven.

Amblyomma differs from *Ixodes* in the possession of eyes; and he was by no means satisfied that the Beach Haven Ticks possess such organs, unless they form the prominent posterior angles of the head. The Ticks have been supposed to feed on vegetable matter, until they reach maturity. As the mouth organs of the larva do not differ from those of the adult, he thought this doubtful.

In the American Entomologist 1870, p. 160, Seed-Ticks found under the bark of apple trees, are stated to be the young of one of our most common wood-ticks, *Ixodes unipunctata*, but he thought this has not been positively determined to be the case.

He had been repeatedly told of a minute tick, commonly called the Seed-Tick, not uncommon in our vicinity, which attacks man, and buries itself beneath the skin. He had suspected it to be the young of *Ixodes*, but had no opportunity of determining the question.

NOTE:—The following day, September 24th, the young Ticks appeared generally less active and many were motionless and seemed dead. Thirty active ones were placed on the inner side of his forearm, and there retained for ten minutes, but as they wandered about aimlessly and with no apparent disposition to attach themselves, they were removed.

Though the young Ticks had not fed they actually seem to have grown, for at the present time they generally measure 0.725 mm. in length by 0.45 mm. in breadth.

The adult male and female appear about the same size, for the two range from $\frac{1}{8}$ to $\frac{3}{16}$ of an inch in length. One of those distended with blood measured $\frac{9}{16}$ of an inch long by $\frac{6}{16}$ in breadth; and similar specimens after having laid their eggs had shrunk to $\frac{7}{16}$ by $\frac{5}{16}$.

Finally the same day the Ticks were placed in alcohol for preservation.

Mr. Isaac C. Martindale was elected Treasurer to serve for the unexpired term of the late Mr. William C. Henszey.

SEPTEMBER 30.

The President, Dr. JOSEPH LEIDY, in the chair.

Twenty-eight persons present.

A paper entitled "On the Influence of Previous Pregnancies on Off-spring," by Charles Morris, was presented for publication.

Parasites of Mola rotunda.—PROF. LEIDY stated that one day during his stay at Beach Haven, N. J., while men of the life saving station were directly off shore watching the bathers in case of accident, a Sun-fish, *Mola rotunda*, approached the boat, apparently, as they supposed, sleeping. The fish, weighing nearly two hundred pounds, was readily taken without resistance. It proved to be of additional interest from the great number and variety of parasites with which it was infested. Some of these had occasioned a considerable degree of ulceration along the base of the caudal fin. Chief among them was the large Lerneæ, *Penella filosa*, which hung in great clusters from the root of the dorsal and other fins. They were from five to nearly seven inches long, and had the head and neck, buried in the flesh of the fish from one to three inches. To many of them were appended the curious barnacle, *Conchoderma virgata*; on one *Penella* a bunch of seven, most of which were nearly two inches long. Were also more or less profusely covered with colonies of the Hydroid Polyp, *Eucope parasitica*.

The characters of the *Penella* are as follows: Head compressed spheroid, ventrally thickly papillate, dorsally with a median and lateral pair of obtuse horns. Neck long and cylindrical; with 4 pairs of minute black hooks just behind the head ventrally. Thorax thicker, cylindrical, annulated. Abdomen or tail shorter, narrower and annulated: with crowded, lateral filamentary appendages branching from the base. Ovaries long and filiform. Head, neck and ovaries straw-colored; thorax, abdomen and appendages black.

In the Règne Animal of Cuvier, it says, there is in the Mediterranean a species, *Penella filosa*, seven or eight inches long, which penetrates into the flesh of the Sword-fish, the Tunny and the Sun-fish, and torments them horribly. Similar cases of the wonderful bounty of nature are frequent and remind us of the remarks of Mr. Spencer, considered more favorable to the evolutionary than to the special creation theory. While to both may be applied the question, why the amount of suffering entailed on sentient beings by parasites could not have been avoided, to the former there does not arise the question, why are they deliberately inflicted?